If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match.
The on-screen version of the Collider-Accelerator Department Procedure is the Official Version.
Hard copies of all signed, official, C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A.

C-A OPERATIONS PROCEDURES MANUAL

7.1.32 Insulating Vacuum System #4 for Cold Box 5

Text Pages 2 through 5

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved: _____***Signature on File***_____ _____
Collider-Accelerator Department Chairman Date

D. Lederle

7.1.32 Insulating Vacuum System #4 for Cold Box 5

1. Purpose

This procedure provides instructions for the operation of vacuum skid 4 for the insulating vacuum of cold box 5 of the RHIC 25 kW helium refrigerator. Vacuum skid 4 consists of one Kinney fore pump, 4-E565, one Varian diffusion pump, 4-E561, interconnecting piping, valves, instrumentation and control.

2. Responsibilities

2.1 The Shift Supervisor or an operator designated by the Shift Supervisor is responsible for conducting the procedure and providing documentation in the Cryogenic Control Room Logbook.

2.2 Should a problem arise during the completion of this procedure, the Shift Supervisor shall contact the Technical Supervisor for instructions before continuing.

3. Prerequisites

3.1 The operator shall become familiar with the Vacuum System #4 P&ID drawing 3A995058.

3.2 The diffusion pumps are mounted on the 10 inch penetration on the cold boxes. The fore pumps, the control panel and the rest of the vacuum skid are located on the lower level of the refrigerator building. The operator shall familiarize himself with the locations of the hardware.

4. Precautions

4.1 General safety precautions on the operation of a cryogenic system.

4.2 The bottom of the diffusion pump will be very hot. The operator shall not touch it.

4.3 The Diffusion Pumps have high temperature alarms which are initiated by the following instruments:

Diffusion Pump 4-E561 High Temperature 4-TSH561

5. Procedure

5.1 Check the Oil

_____ [1] Check the oil level from the sight glass of the diffusion pump and sight glass of the fore pump.

_____ [2] If oil level is too low, report to the supervisor for adding oil. Record in logbook.

_____ [3] If oil is milky, report to the supervisor for changing pump oil. Record in logbook.

5.2 Service Utilities

_____ [1] Open the water inlet valve 4-W528M and the outlet valve 4-W577M to cool the baffle, 4-E581, and the diffusion pump, 4-E561. Adjust flow rate to 15 gallons per hour for 4-FI-578W.

_____ [2] Check air pressure from gage located upstream of 4-A573M. Instrument air shall be between 80 and 100 psig. Open air supply valves 4-A573M and 4-A579M on the skid.

_____ [3] Supply electric power from circuit 2 of the Main Distribution Panel to motor control center MCC. The switch is located on the south wall across the walk way from vacuum skid 1 in the lower level of the refrigerator building.

_____ [4] Supply power to the motors of fore pump 4-E565, and to diffusion pump 4-E561 from the electric feed from the main distribution panel located on the east side in the lower level of the refrigerator building.

_____ [5] Turn on the vacuum skid 4 circuit breakers 30 and 32 on the RP-2 panel located near local instrumentation panel 2.

5.3 Operating the Vacuum Skid

5.3.1 Initial Valve Positions

_____ [1] Open the isolation valve 4-V563M for fore pump 4-E565.

_____ [2] Crack open isolation valve 4-V558M.

5.3.2 Turn On the Control Switch

_____ [1] The operation of the vacuum skid is automatic and one control switch 4-HS500 starts the system. The control source is located on the lower part of the control panel.

_____ [2] By turning on the control switch 4-HS500, automatic valves 4-V559A and 4-V560A will be closed and the fore pump 4-E565 will be turned on.

_____ [3] After approximately 30 seconds time delay, the control logic will open 4-V559A and 4-V560A, and start to pump down the vacuum space.

_____ [4] During the initial roughing stage, slowly open 4-V558M while listening to the sound from the fore pump to avoid overloading the pump.

_____ [5] Check the level and condition of the pump oil on the sight glass of the fore pump.

_____ [6] If the oil becomes milky, the operator should open the ballast valve to remove water vapor contained in the pump oil. Wait for 30 minutes and close the ballast valve.

_____ [7] Repeat step 5 and 6 if necessary. Should the condition of the oil not improved, then the operator shall report to the supervision for changing pump oil.

_____ [8] Fully open 4-V558M when the vacuum reaches 100 Torr.

_____ [9] When the vacuum decreases to the set point (about 2 miliTorr) of vacuum gage 4PI-551V ,valve 4-V559A will be closed.

_____ [10] Slide valve 4-V554A will be open and the diffusion pump will be turned on for final stage of pump down. The slide valve can be opened or closed with a toggle switch locates inside the control panel.

_____ [11] If the cold box vacuum 4PI-552V and 4PI-551V, does not improved over expected time period, the operator should report to the supervisor for suitable action.

6. Documentation

6.1 The check-off lines on the procedure are for place-keeping only. The procedure is not to be initialed or signed, it is not a record.

6.2 The Shift Supervisor, or designee, shall document the completion of the procedure in the Cryogenics Control Room Log.

7. References

7.1 Drawing 3A995058

8. Attachments

None